

# Optimal Sticky Prices Under Rational Inattention

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## What Story Is This Paper Telling?

Price-setters can't observe (or can't process) all information available in the marketplace. Key choice: to observe more firm-specific or more aggregate information?

3 key considerations

1. How volatile is aggregate vs. idiosyncratic information?
2. How sensitive is your utility to each?
3. What are others learning about?

If little aggregate information is observed, prices react sluggishly to aggregate shocks.

## The 'Feedback Effect'

**Individual feedback** - Learn about shocks that affect price most. Observing a shock makes your price more responsive to it. Choice amplifies big shocks, marginalizes small ones.

**Aggregate feedback** - If others learn  $X$ , you do too.

- Why? Complementarity in actions generates complementarity in information acquisition. (Hellwig and Veldkamp, 2006)
- In this model, price-setting is complementary. If others set high prices, you raise your price.  
→ Information choice is a strategic complement.

Effects are new: Woodford (2001) has no information choice. Sims (2003) uses a representative agent - no strategic effect.

## The Pitfalls of Information Complementarity

**Synchronization** - Problem in costly price-adjustment models. It reappears in information choice (Reis 2006). Agents want to learn and adjust prices at the same time.

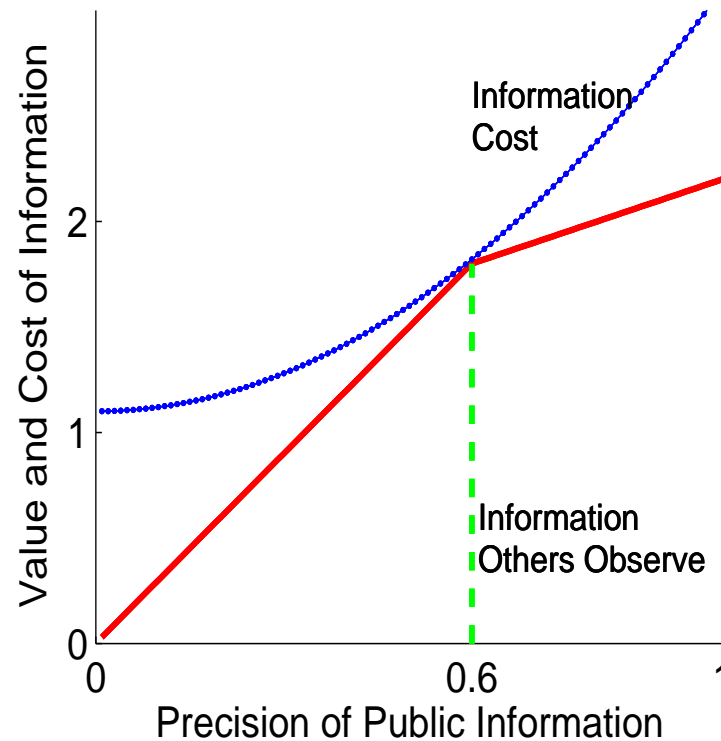
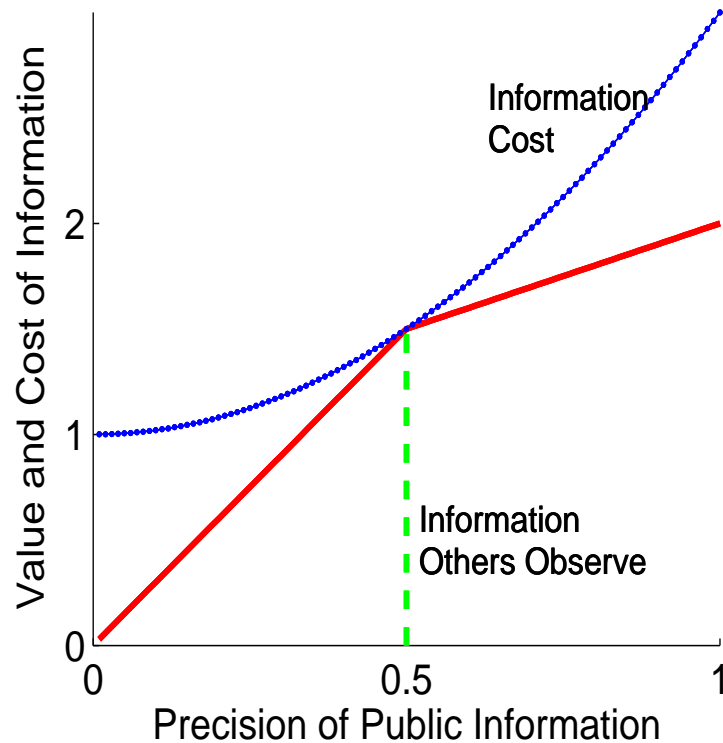
- This model: Allocating precision, rather than choosing a time to learn, avoids that problem.

**Multiple equilibria** - Arises when information is public.

(E.g. agents choose to observe the true state.)

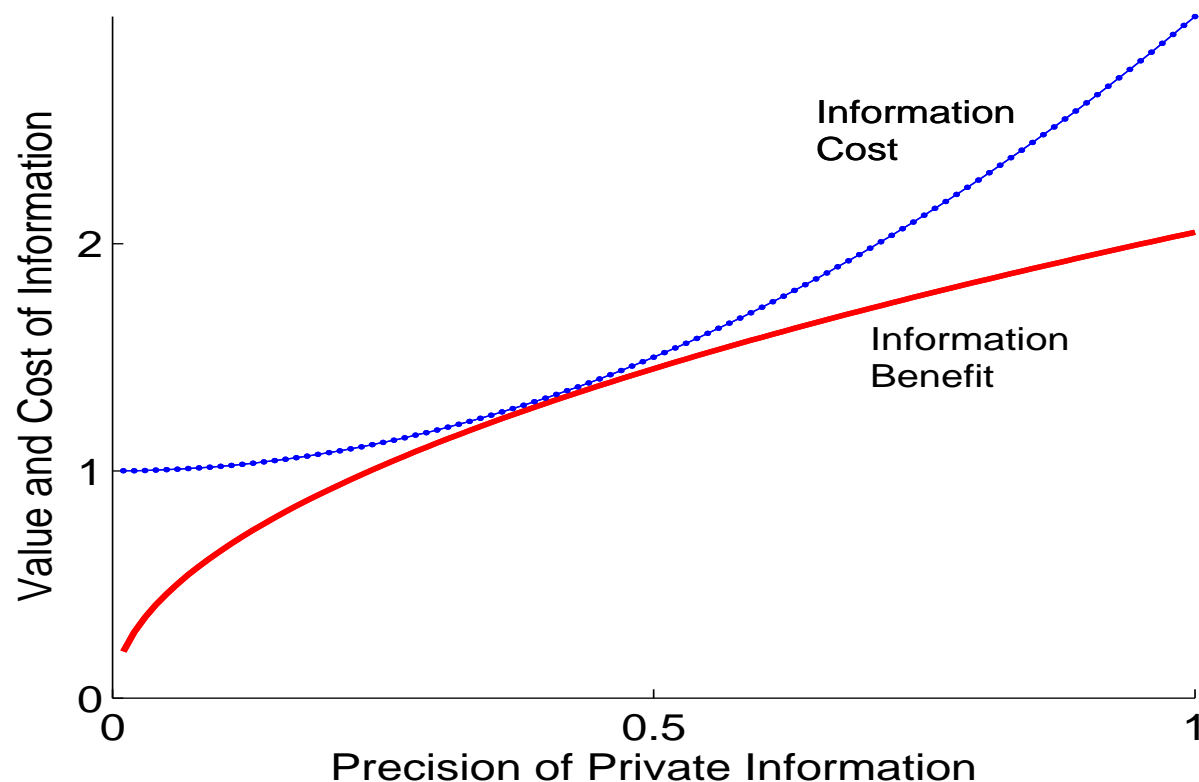
- This model: Independent (private) signals avoids this problem too. Equilibrium is unique.

# Public Information $\rightarrow$ Multiple Equilibria



Public information, in excess of what others observe, is private.  
Kink in marginal value  $\rightarrow$  multiplicity. (Hellwig & Veldkamp, 2006)

## Private Information $\rightarrow$ Unique Equilibrium



Private information is complementary. The complementarity is not strong enough to generate multiplicity. (Hellwig & Veldkamp, 2006)

## Complementarity: The New Challenge

- Complementarity makes coordinating on aggregate information more valuable than on firm-specific information (all else equal). You want to know what others know.
- They need very volatile firm-specific shocks to compensate.
- Calibrating to 8.5% average price changes and low GDP volatility makes firm-specific shocks 10× more volatile.
- Implies that firms optimally allocate 94% of capacity to firm-specific shocks and 6% to aggregate.  
→ Slow reactions to aggregate shocks.
- Result hinges on relative volatilities.

## The Learning Technology

### Essential features :

- Choice is over signal composition, not a timing choice.
- Signals are independent draws.

### Non-essential features :

- Allowing covariance of firm-specific and aggregate shocks in signals (Sims 2006).  
Does not change strategic incentives to learn.
- Entropy constraint - Could be a constraint on the number of signal draws.
- Interpretation - many are consistent.

## Delegated Information Processing

- Strong incentive to delegate processing to an agent who sets prices for many similar firms. Share the processing cost.
- Makes more aggregated information cheaper.
- Markets for processing induce too much reaction to common shocks
  - a theory of industry comovement (Veldkamp & Wolfers, '06)
  - concentrated cross-border investment flows (Wiederholt, '03)

## Conclusions

- Great paper - brings us a significant step beyond existing models of information-constrained price setting. Avoids synchronization and multiple equilibria.
- Mechanism is more general than the paper suggests.
- Raises an interesting question: Are agents processing their own information or are there markets that do it for them?